

Arty. Docket No.: 59033-278849
Application No.: 09/689,222

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Please amend claims 4-5, 10, 18, 24 and 38, without prejudice.

Please cancel claims 1-3, 6-9, 12-17, 19-23, 26-37 and 39-40, without prejudice.

Please add new claims 41-71.

1-3. (Canceled)

4. (Currently Amended) A method of allowing a user to interactively explore how changes in path selection between media aggregation managers affects projected link utilization in a network comprising:

displaying graphical representations of a first media aggregation manager and a second media aggregation manager, the first and second media aggregation managers capable of serving as reservation session aggregation points [[between]] on behalf of a first user community and a second user community, respectively, and having the first user community and the second user community communicatively coupled by a plurality of physical paths through which media packets may be exchanged by way of one or more packet forwarding devices;

displaying a first projected link utilization schedule in response to a first request to analyze the effect of conveying media packets between the first user community and the second user community over based upon an indication that a first path of the plurality of

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

~~physical paths will be used to convey media packets between the first and second media aggregation managers, the first projected link utilization schedule illustrating predicted bandwidth usage for routers associated with the first path; and~~

~~displaying a second projected link utilization schedule in response to a second request to analyze the effect of conveying media packets between the first user community and the second user community over based upon an indication that a second path of the plurality of physical paths will be used to convey media packets between the first and second media aggregation managers, the second projected link utilization schedule illustrating predicted bandwidth usage for routers associated with the second path.~~

5. (Currently Amended) The method of claim [[2]] 4, further comprising overlaying a selected path of the plurality of physical paths onto existing bandwidth allocations to determine a projected link utilization associated with the selected path.

6-9. (Canceled)

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

10. (Currently Amended) A Graphical User Interface (GUI) comprising:

a display portion first user interface screen that graphically depicts and identifies a plurality of nodes on a network, wherein the plurality of nodes includes at least a pair plurality of media aggregation managers that are configured to provide application/protocol specific multiplexing/demultiplexing of media traffic for a plurality of application sessions between a pair of communities onto a preallocated reservation protocol session, and wherein the plurality the pair of media aggregation managers are visually distinguishable from other nodes on the network[[.]]; and

a second user interface screen that graphically depicts a plurality of paths through the network, each path of the plurality of paths representing a potential path over which media packets are capable of being transferred between the pair of media aggregation managers, wherein an end-user is capable of initiating (1) configuration of a set of routers of the plurality of nodes that are part of a selected path of the plurality of paths to route media packets exchanged between terminals of the pair of communities over the selected path via the pair of media aggregation managers, and (2) establishment of the preallocated reservation protocol session between the pair of media aggregation managers.

11. (Original) The GUI of Claim 10 further comprising an identification table for displaying characteristics of a selected node.

12-17. (Canceled)

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

18. (Currently Amended) A method comprising:

receiving information identifying a selected path of a plurality of potential paths through a network that are capable of communicating media packets between a first media aggregation manager and a second media aggregation manager; and

responsive to receiving the information identifying the selected path, substantially simultaneously provisioning a plurality of routers that are part of the selected path to force a media to travel from a route media packets exchanged between the first media aggregation manager and then through the plurality of routers and to a second media aggregation manager over the selected path.

19-23. (Canceled)

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

24. (Currently Amended) A machine-readable medium having stored thereon data representing sequences of instructions which, when executed by a processor, cause the processor to:

display graphical representations of a first media aggregation manager and a second media aggregation manager, the first and second media aggregation managers capable of serving as reservation session aggregation points [[between]] on behalf of a first user community and a second user community, respectively, and having the first user community and the second user community communicatively coupled by a plurality of physical paths through which media packets may be exchanged by way of one or more packet forwarding devices;

display a first projected link utilization schedule in response to a first request to analyze the effect of conveying media packets between the first user community and the second user community over based upon an indication that a first path of the plurality of physical paths ~~will be used to convey media packets between the first and second media aggregation managers, the first projected link utilization schedule illustrating predicted bandwidth usage for routers associated with the first path;~~ and

display a second projected link utilization schedule in response to a second request to analyze the effect of conveying media packets between the first user community and the second user community over based upon an indication that a second path of the plurality of physical paths ~~will be used to convey media packets between the first and second media aggregation managers, the second projected link utilization schedule illustrating predicted bandwidth usage for routers associated with the second path.~~

Art. Docker No.: 59033-278849
Application No.: 09/689,222

25. (Original) The machine-readable medium method of claim 24, further comprising instructions to overlay a selected path of the plurality of physical paths onto existing bandwidth allocations to determine a projected link utilization associated with the selected path.

26-37. (Canceled)

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

38. (Currently Amended) A machine-readable medium having stored thereon data representing sequences of instructions which, when executed by a processor, cause the processor to:

receive information identifying a selected path of a plurality of potential paths through a network that are capable of communicating media packets between a first media aggregation manager and a second media aggregation manager; and

responsive to receiving the information identifying the selected path, substantially simultaneously provision a plurality of routers that are part of the selected path to force a media to travel from a route media packets exchanged between the first media aggregation manager and the through the plurality of routers and to a second media aggregation manager over the selected path.

39-40. (Canceled)

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

41. (New) A method comprising:

discovering a set of nodes within a Voice over Internet Protocol (VoIP) network, the set of nodes including a plurality of routers and a plurality of communities;

receiving an indication of a first node of the set of nodes that will serve as a reservation protocol session proxy for one or more terminals associated with a first community of the plurality of communities;

receiving an indication of a second node of the set of nodes that will serve as a reservation protocol session proxy for one or more terminals associated with a second community of the plurality of communities;

graphically depicting a plurality of paths through the VoIP network each representing a potential path over which media packets are capable of being transferred between the first community and the second community;

configuring a set of routers of the plurality of routers that are part of a selected path of the plurality of paths to route media packets exchanged between the first community and the second community over the selected path; and

establishing a single reservation protocol session between the first node and the second node onto which a plurality of application sessions among the one or more terminals of the first community and the one or more terminals of the second community will be multiplexed.

42. (New) The method of claim 41, wherein the first node and the second node comprise media aggregation managers.

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

43. (New) The method of claim 41, wherein the single reservation protocol session comprises a ReSerVation Protocol (RSVP) session.
44. (New) The method of claim 41, wherein a first terminal of the one or more terminals associated with the first community and a second terminal of the one or more terminals associated with the second community are running an Internet telephony application and wherein an application session established between the first terminal and the second terminal utilizes bandwidth reserved for the single reservation protocol session to exchange voice transmissions between the first terminal and the second terminal.
45. (New) The method of claim 41, wherein said graphically depicting a plurality of paths through the VoIP network comprises displaying the plurality of paths in a prioritized fashion based upon one or more predetermined factors.
46. (New) The method of claim 45, wherein the one or more predetermined factors include one or more of:
 - a number of nodes in the potential path;
 - total available bandwidth for the potential path;
 - available communications bandwidth on the potential path;
 - propagation speed between nodes that make up the potential path; and
 - physical length of travel between nodes that make up the potential path.
47. (New) The method of claim 41, further comprising prior to said configuring a set of routers of the plurality of routers that are part of a selected path of the plurality of paths:
 - receiving a request to analyze the selected path;

Atty. Docker No.: 59033-278849
Application No.: 09/689,222

determining a total combined schedule of bandwidth allocation by combining (1) a predicted increase in bandwidth allocation for each router of the set of routers that are part of the selected path assuming the single reservation protocol session between the first node and the second node is to be established, and (2) a current bandwidth allocation for each router of the set of routers that are part of the selected path representing bandwidth previously allocated.

48. (New) The method of claim 47, further comprising displaying the total combined schedule of bandwidth allocation for the selected path to an administrator of the VoIP network.
49. (New) The method of claim 48, wherein the displayed total combined schedule of bandwidth allocation allows the administrator to confirm whether utilization of the available communication bandwidth for each of the routers of the set of routers that are part of the selected path is within a desired range.
50. (New) The method of claim 41, further comprising displaying a network map including visually distinguishable graphical representations of the plurality of routers, the plurality of communities, a plurality of media aggregation managers, and interconnections among them.
51. (New) The method of claim 41, further comprising:
 - receiving information regarding a number of end-users that are part of the first community that are capable of communicating via the first node; and
 - receiving information regarding a number of end-users that are part of the second community that are capable of communicating via the second node.

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

52. (New) The method of claim 41, further comprising:

receiving information identifying a pair of nodes of the set of nodes that serve as reservation protocol session proxies for terminals associated with a pair of communities of the plurality of communities;

graphically depicting (1) a currently selected path through the VoIP network over which media packets are currently configured to be transferred between the pair of communities, and (2) one or more alternative paths through the VoIP network over which media packets are capable of being transferred between the pair of communities; and

responsive to a request to change the currently selected path to an alternative path of the one or more alternative paths,

reconfiguring those of the plurality of routers that are part of the currently selected path,

configuring those of the plurality of routers that are part of the alternative path to route media packets exchanged between the pair of communities over the alternative path,

deallocating bandwidth allocated to those of the plurality of routers that are part of the currently selected path, including terminating a reservation protocol session between the pair of communities, and

establishing a new reservation protocol session between the pair of nodes onto which a plurality of application sessions among the terminals of the pair of communities will be multiplexed.

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

53. (New) The method of claim 41, further comprising:

receiving information identifying a pair of nodes of the set of nodes that serve as reservation protocol session proxies for terminals associated with a pair of communities of the plurality of communities;

graphically depicting a currently selected path through the VoIP network over which media packets are currently configured to be transferred between the pair of communities; and

responsive to a request to deallocate the currently selected path, deallocating bandwidth allocated to routers along the currently selected path communicatively coupling the pair of nodes, including terminating a reservation protocol session between the pair of nodes.

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

54. (New) An apparatus for administering a Voice over Internet Protocol (VoIP) network comprising:

a storage device having stored therein one or more routines to receive input from a system administrator and convey information about the VoIP network to the system administrator;

a processor coupled to the storage device to execute the one or more routines to perform discovery of the VoIP network, identify potential paths through the VoIP network over which media packets are capable of being transferred between a pair of selected nodes participating in the VoIP network, and configure the VoIP network to use a selected path of the potential paths to exchange media packets between a pair of communities participating in the VoIP network; and

a display coupled to the processor, wherein:

a set of nodes within the VoIP network is discovered, the set of nodes including a plurality of routers and a plurality of communities;

the potential paths are graphically depicted on the display in a prioritized fashion; a set of routers of the plurality of routers that are part of the selected path are configured to route media packets exchanged between the pair of communities over the selected path;

the pair of selected nodes are configured to act as reservation protocol session proxies on behalf of the pair of communities; and

a single reservation protocol session is established between the pair of nodes onto which a plurality of application sessions among terminals of the pair of communities will be multiplexed.

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

55. (New) The apparatus of claim 54, wherein the pair of nodes comprise media aggregation managers.
56. (New) The apparatus of claim 54, wherein the single reservation protocol session comprises a ReSerVation Protocol (RSVP) session.
57. (New) The apparatus of claim 54, wherein the processor determines a total combined schedule of bandwidth allocation by combining (1) a predicted increase in bandwidth allocation for each router of the set of routers that are part of the selected path assuming the single reservation protocol session between the pair of selected nodes is to be established, and (2) a current bandwidth allocation for each router of the set of routers that are part of the selected path representing bandwidth previously allocated.
58. (New) The apparatus of claim 57, wherein the total combined schedule of bandwidth allocation for the selected path is presented to the system administrator on the display to allow the system administrator to confirm whether utilization of the available communication bandwidth for each of the routers of the set of routers that are part of the selected path is within a desired range.
59. (New) The apparatus of claim 54, wherein a network map is graphically depicted on the display, the network map including visually distinguishable graphical representations of the plurality of routers, the plurality of communities, a plurality of media aggregation managers, and interconnections among them.

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

60. (New) A method comprising:

a step for receiving information identifying a selected path of a plurality of potential paths through a network that are capable of communicating media packets between a first media aggregation manager and a second media aggregation manager; and responsive to receiving the information identifying the selected path, a step for substantially simultaneously provisioning a plurality of routers that are part of the selected path to route media packets exchanged between the first media aggregation manager and the second media aggregation manager over the selected path.

Atty. Docker No.: 59033-278849
Application No.: 09/689,222

61. (New) A method comprising:

discovering a set of nodes within a Voice over Internet Protocol (VoIP) network, the set of nodes including a plurality of routers and a plurality of groups of terminals;

receiving an indication of a first node of the set of nodes that will serve as a reservation protocol session proxy for one or more terminals associated with a first group of terminals of the plurality of groups of terminals;

receiving an indication of a second node of the set of nodes that will serve as a reservation protocol session proxy for one or more terminals associated with a second group of terminals of the plurality of groups of terminals;

graphically depicting a plurality of paths through the VoIP network each representing a potential path over which media packets are capable of being transferred between the first group of terminals and the second group of terminals;

configuring a set of routers of the plurality of routers that are part of a selected path of the plurality of paths to route media packets exchanged between the first group of terminals and the second group of terminals over the selected path; and

establishing a single reservation protocol session between the first node and the second node onto which a plurality of application sessions among the one or more terminals of the first group of terminals and the one or more terminals of the second group of terminals will be multiplexed.

62. (New) The method of claim 61, wherein the first node and the second node comprise media aggregation managers.

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

63. (New) The method of claim 61, wherein the single reservation protocol session comprises a ReSerVation Protocol (RSVP) session.
64. (New) The method of claim 61, wherein a first terminal of the one or more terminals associated with the first group of terminals and a second terminal of the one or more terminals associated with the second group of terminals are running an Internet telephony application and wherein an application session established between the first terminal and the second terminal utilizes bandwidth reserved for the single reservation protocol session to exchange voice transmissions between the first terminal and the second terminal.
65. (New) The method of claim 61, wherein said graphically depicting a plurality of paths through the VoIP network comprises displaying the plurality of paths in a prioritized fashion based upon one or more predetermined factors.
66. (New) The method of claim 65, wherein the one or more predetermined factors include one or more of:
 - a number of nodes in the potential path;
 - total available bandwidth for the potential path;
 - available communications bandwidth on the potential path;
 - propagation speed between nodes that make up the potential path; and
 - physical length of travel between nodes that make up the potential path.
67. (New) The method of claim 61, further comprising prior to said configuring a set of routers of the plurality of routers that are part of a selected path of the plurality of paths:
 - receiving a request to analyze the selected path;

Art. Docket No.: 59033-278849
Application No.. 09/689,222

determining a total combined schedule of bandwidth allocation by combining (1) a predicted increase in bandwidth allocation for each router of the set of routers that are part of the selected path assuming the single reservation protocol session between the first node and the second node is to be established, and (2) a current bandwidth allocation for each router of the set of routers that are part of the selected path representing bandwidth previously allocated.

68. (New) The method of claim 67, further comprising displaying the total combined schedule of bandwidth allocation for the selected path to an administrator of the VoIP network.
69. (New) The method of claim 68, wherein the displayed total combined schedule of bandwidth allocation allows the administrator to confirm whether utilization of the available communication bandwidth for each of the routers of the set of routers that are part of the selected path is within a desired range.
70. (New) The method of claim 61, further comprising displaying a network map including visually distinguishable graphical representations of the plurality of routers, the plurality of groups of terminals, a plurality of media aggregation managers, and interconnections among them.

Atty. Docket No.: 59033-278849
Application No.: 09/689,222

71. (New) A method comprising:

a step for discovering a set of nodes within a Voice over Internet Protocol (VoIP) network, the set of nodes including a plurality of routers and a plurality of groups of terminals;

a step for receiving an indication of a first node of the set of nodes that will serve as a reservation protocol session proxy for one or more terminals associated with a first group of terminals of the plurality of groups of terminals;

a step for receiving an indication of a second node of the set of nodes that will serve as a reservation protocol session proxy for one or more terminals associated with a second group of terminals of the plurality of groups of terminals;

a step for graphically depicting a plurality of paths through the VoIP network each representing a potential path over which media packets are capable of being transferred between the first group of terminals and the second group of terminals;

a step for configuring a set of routers of the plurality of routers that are part of a selected path of the plurality of paths to route media packets exchanged between the first group of terminals and the second group of terminals over the selected path; and

a step for establishing a single reservation protocol session between the first node and the second node onto which a plurality of application sessions among the one or more terminals of the first group of terminals and the one or more terminals of the second group of terminals will be multiplexed.